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09/892,569	06/28/2001	Guo Qiang Wang	57983.000037	2538

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EXAMINER
CURS, NATHAN M

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/892,569	WANG ET AL.
	Examiner	Art Unit
	Nathan Curs	2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 06 July 2004.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-26 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-4,7-14 and 16-20 is/are rejected.

7)☒ Claim(s) 5,6,15 and 21-26 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 06 July 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4, 7-13, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banerjee et al. ("Generalized multiprotocol label switching: an overview of routing and management enhancements"; Banerjee et al., IEEE Communications Magazine, Vol. 39, Issue 1, Jan 2001, Pages 144-150.) in view of Martin (US Published Patent Application No. 09/861167).

Regarding claim 1, Banerjee et al. disclose a method for routing information over an optical network supporting multiple optical service models, where a suite of control plane protocols support peer and overlay models, and a hybrid of these two (augmented), where the overlay model is a sub-set of the peer model achieved by disabling topology sharing (page 145, col. 1, paragraph 2 through col. 2, paragraph 3), where OSPF link databases contain hierarchical link state path (LSP) information, where hierachical LSP types are ordered from low to high depending on interface types and network domains, and where these LSP types define different flooding domains; for example, the optical switching domain (fiber switching and lambda switching) at OXCs with corresponding optical UNI interfaces, and the IP switching (packet switching) domain with IP router interfaces (fig. 3 and figure description, page 146, col. 1, paragraph 3; page 147, col. 2, paragraph 3; and page 148, col. 1, paragraph 3 to col. 2, paragraph 1). Banerjee et al. also disclose flooding domain advertisements comprise

representations of link types and available bandwidth information (page 146, col. 1, paragraph 3), where it would have been obvious to one of ordinary skill in the art at the time of the invention to include interface descriptor information in the representation of link types for representing the hierarchical LSPs and different network domains. Banerjee et al. also disclose that the LSPs are establish using constraint-based routing techniques (page 146, col. 2, paragraph 4), but do not disclose the specifics of checking flooding domain information of the link state advertisements to decide whether to broadcast or block propagation of the link state advertisement, and accepting or rejecting the request based on the flooding domain information. Martin discloses OSPF protocol, with several types of LSAs that describe the state of the network interfaces, where the OSPF is used to define different network areas to limit the flooding of the entire system by not flooding certain LSA types to other areas (paragraphs 0040-0042). It would have been obvious to one of ordinary skill in the art at the time of the invention to use several LSA types that comprise interface information, and that are checked and then accepted or rejected for further flooding to other network areas, as taught by Martin, in order to establish the hierarchical LSPs flooding domains and to implement the constraint-based routing disclosed by Banerjee et al.

Regarding claim 4, Banerjee et al. disclose a method for routing information over an optical network having multiple optical service models, where a suite of control plane protocols support peer and overlay models, and a hybrid of these two (augmented), where the overlay model is a sub-set of the peer model achieved by disabling topology sharing (page 145, col. 1, paragraph 2 through col. 2, paragraph 3), where OSPF link databases contain hierarchical link state path (LSP) information, where hierachical LSP types are ordered from low to high depending on interface types and network domains, and where these LSP types define different flooding domains; for example, the optical switching domain (fiber switching and lambda

switching) at OXCs with corresponding optical UNI interfaces, and the IP switching (packet switching) domain with IP router interfaces (fig. 3 and figure description, page 146, col. 1, paragraph 3; page 147, col. 2, paragraph 3; and page 148, col. 1, paragraph 3 to col. 2, paragraph 1). Banerjee et al. also disclose optical switches receiving flooding domain advertisements, the advertisements comprising representations of link types and available bandwidth per wavelength (page 146, col. 1, paragraph 3), where it would have been obvious to one of ordinary skill in the art at the time of the invention to include interface descriptor information in the representation of link types for representing wavelength routing in the hierarchical LSPs and different network domains. Banerjee et al. also disclose that the LSPs are establish using constraint-based routing techniques, where wavelengths are viewed as implicit labels used in determining outgoing link information (page 146, col. 2, paragraphs 2-4), but do not disclose the specifics of flooding the link state advertisement if the outgoing link information includes a first pre-defined value; blocking the link state advertisement if the outgoing link information includes a second predefined value. Martin discloses OSPF protocol, with several types of LSAs that describe the state of the network interfaces, where the OSPF is used to define different network areas to limit the flooding of the entire system by flooding certain LSA types to other areas, and blocking other LSA types (paragraphs 0040-0042). It would have been obvious to one of ordinary skill in the art at the time of the invention to use several LSA types that comprise interface information, and that are checked and then accepted or rejected for further flooding to other network areas, as taught by Martin, in order to establish the hierarchical LSPs flooding domains and to implement the constraint-based wavelength routing for OXCs disclosed by Banerjee et al. Banerjee et al. in view of Martin disclose wavelengths viewed as implicit labels used in determining outgoing link information at OXCs (Banerjee et al.: page 146, col. 2, paragraphs 2-4), and it would have been obvious to that the

interface descriptor represents wavelength information for wavelength routing as described above. However, Banerjee et al. in view of Martin do not disclose comparing the incoming interface descriptor to the outgoing link information if the outgoing link information includes neither the first pre-defined value nor the second pre-defined and flooding the link state advertisement only if the incoming optical interface descriptor includes a value matching the outgoing link information. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the wavelength information in the interface descriptor as the wavelength information used in determining outgoing link information at an OXC, as disclosed by Banerjee et al., in the event that the OXC does not receive either an LSA that corresponds to flooding or an LSA that corresponds to blocking at the OXC, for example if these LSA types had already been blocked elsewhere in the network.

Regarding claim 7, Banerjee et al. in view of Martin disclose the method of claim 4, wherein the multiple optical service models comprise an overlay model, a peer-to-peer model, and a hybrid (augmented) of these two (Banerjee et al.: page 145, col. 1, paragraph 2 through col. 2, paragraph 3).

Regarding claim 8, Banerjee et al. in view of Martin disclose the method of claim 7, wherein the link state advertisement is an optical link state advertisement (page 146, col. 1, paragraph 3), since the advertisement advertises availability of optical resources in the network.

Regarding claim 9, Banerjee et al. in view of Martin disclose the method of claim 8, and that the overlay service mode restricts interaction with the internal optical domains (Banerjee et al.: page 145, col. 1, paragraph 2 to col. 2, paragraph 3). Based on the description above of blocking or flooding different LSA types representing different LSP domains, one domain of which is the optical domain (Banerjee et al.: fig. 3), it would have been obvious to one of ordinary skill in the art at the time of the invention to flood the LSA corresponding to the service

modes of augmented mode or the peer-to-peer, if the outgoing link is the augmented mode or the peer-to-peer mode, and blocking the LSA corresponding to overlay mode if the service mode of the outgoing link is the overlay mode, in order to achieve the overlay model disclosed by Banerjee et al.

Regarding claim 10, Banerjee et al. in view of Martin disclose the method of claim 7, wherein a link state advertisement type is either flooded or blocked according to whether the service is overlay, peer-peer, or augmented, as described above, indicates that the LSA types flooded for all service modes are service link state advertisements.

Regarding claim 11, Banerjee et al. in view of Martin disclose the method of claim 10, and disclose LSA types that flooded to all areas of a system (Martin: paragraph 0042), and thus are flooded to all the LSP domains, or in other words, are flooded in all service modes, since the overlay service mode, for example, restricts flooding in the internal optical domains, as disclosed by Banerjee et al.

Regarding claim 12, Banerjee et al. in view of Martin disclose the method of claim 7, but do not explicitly disclose a link state advertisement that is neither a service link state advertisement or an optical link state advertisement. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that one of the LSA types corresponding to the LSP domains as described above could correspond to augmented service mode flooding/blocking, as opposed to a service LSA type (all domains flooded) or an optical LSA (optical domain blocked), in order to implement the augmented service model which is a hybrid of overlay and peer-to-peer, as disclosed by Banerjee et al.

Regarding claim 13, Banerjee et al. in view of Martin disclose the method of claim 12, but do not disclose blocking the optical link state advertisement if the service mode is overlay mode or augmented mode and flooding the link state advertisement if the service mode is the

peer-to-peer mode. However, based on the different LSA types corresponding to LSP domains described above, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a LSA type that is blocked for augmented and optical service modes, in order to implement the overlay or augmented (blocked) service modes at different nodes.

Regarding claim 16, Banerjee et al. disclose a system for routing information over an optical network having multiple optical service models, where a suite of control plane protocols support peer and overlay models, and a hybrid of these two (augmented), where the overlay model is a sub-set of the peer model achieved by disabling topology sharing (page 145, col. 1, paragraph 2 through col. 2, paragraph 3), where OSPF link databases contain hierarchical link state path (LSP) information, where hierachical LSP types are ordered from low to high depending on interface types and network domains, and where these LSP types define different flooding domains; for example, the optical switching domain (fiber switching and lambda switching) at OXCs with corresponding optical UNI interfaces, and the IP switching (packet switching) domain with IP router interfaces (fig. 3 and figure description, page 146, col. 1, paragraph 3; page 147, col. 2, paragraph 3; and page 148, col. 1, paragraph 3 to col. 2, paragraph 1). Banerjee et al. also disclose flooding domain advertisements to optical switches, the advertisements comprising representations of link types and available bandwidth per wavelength (page 146, col. 1, paragraph 3), where it would have been obvious to one of ordinary skill in the art at the time of the invention to include interface descriptor information in the representation of link types for representing wavelength routing in the hierarchical LSPs and different network domains. Banerjee et al. also disclose that the LSPs are establish using constraint-based routing techniques, where wavelengths are viewed as implicit labels used to establish wavelength routing for OXCs (page 146, col. 2, paragraphs 2-4), but do not disclose the specifics of checking flooding domain information of the link state advertisements to decide

whether to broadcast or block propagation of the link state advertisement, and accepting or rejecting the request based on the flooding domain information. Martin discloses OSPF protocol, with several types of LSAs that describe the state of the network interfaces, where the OSPF is used to define different network areas to limit the flooding of the entire system by not flooding certain LSA types to other areas (paragraphs 0040-0042). It would have been obvious to one of ordinary skill in the art at the time of the invention to use several LSA types that comprise interface information, and that are checked and then accepted or rejected for further flooding to other network areas, as taught by Martin, in order to establish the hierarchical LSPs flooding domains and to implement the constraint-based wavelength routing for OXCs disclosed by Banerjee et al.

Regarding claim 17, Banerjee et al. in view of Martin disclose the system claim 16, further comprising bandwidth control means for flooding a service LSA (Banerjee et al.: page 146, col. 1, paragraph 3).

Regarding claim 18, Banerjee et al. in view of Martin disclose the system of claim 16, wherein the wavelength distribution protocol further comprises means for receiving a constraint-based path from the wavelength routing protocol (Banerjee et al.: page 146, col. 2, paragraphs 2-4).

Regarding claim 19, Banerjee et al. in view of Martin disclose the system of claim 18, wherein the wavelength routing protocol comprises OSPF means for determining an optimal path (page 146, col. 1, paragraph 3 and col. 2, paragraph 4).

Regarding claim 20, Banerjee et al. disclose a system for routing information over an optical network having multiple optical service models, where a suite of control plane protocols support peer and overlay models, and a hybrid of these two (augmented), where the overlay model is a sub-set of the peer model achieved by disabling topology sharing (page 145, col. 1,

paragraph 2 through col. 2, paragraph 3), where OSPF link databases contain hierarchical link state path (LSP) information, where hierachical LSP types are ordered from low to high depending on interface types and network domains, and where these LSP types define different flooding domains; for example, the optical switching domain (fiber switching and lambda switching) at OXCs with corresponding optical UNI interfaces, and the IP switching (packet switching) domain with IP router interfaces (fig. 3 and figure description, page 146, col. 1, paragraph 3; page 147, col. 2, paragraph 3; and page 148, col. 1, paragraph 3 to col. 2, paragraph 1). Banerjee et al. also disclose optical switches receiving flooding domain advertisements, the advertisements comprising representations of link types and available bandwidth per wavelength (page 146, col. 1, paragraph 3), where it would have been obvious to one of ordinary skill in the art at the time of the invention to include interface descriptor information in the representation of link types for representing wavelength routing in the hierarchical LSPs and different network domains. Banerjee et al. also disclose that the LSPs are establish using constraint-based routing techniques, where wavelengths are viewed as implicit labels used in determining outgoing link information (page 146, col. 2, paragraphs 2-4), but do not disclose the specifics of flooding the link state advertisement if the outgoing link information includes a first pre-defined value; blocking the link state advertisement if the outgoing link information includes a second predefined value. Martin discloses OSPF protocol, with several types of LSAs that describe the state of the network interfaces, where the OSPF is used to define different network areas to limit the flooding of the entire system by flooding certain LSA types to other areas, and blocking other LSA types (paragraphs 0040-0042). It would have been obvious to one of ordinary skill in the art at the time of the invention to use several LSA types that comprise interface information, and that are checked and then accepted or rejected for further flooding to other network areas, as taught by Martin, in order to establish

the hierarchical LSPs flooding domains and to implement the constraint-based wavelength routing for OXCs disclosed by Banerjee et al. Banerjee et al. in view of Martin disclose wavelengths viewed as implicit labels used in determining outgoing link information at OXCs (Banerjee et al.: page 146, col. 2, paragraphs 2-4), and it would have been obvious to that the interface descriptor represents wavelength information for wavelength routing as described above. However, Banerjee et al. in view of Martin do not disclose comparing the incoming interface descriptor to the outgoing link information if the outgoing link information includes neither the first pre-defined value nor the second pre-defined and flooding the link state advertisement only if the incoming optical interface descriptor includes a value matching the outgoing link information. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the wavelength information in the interface descriptor as the wavelength information used in determining outgoing link information at an OXC, as disclosed by Banerjee et al., in the event that the OXC does not receive either an LSA that corresponds to flooding or an LSA that corresponds to blocking at the OXC, for example if these LSA types had already been blocked elsewhere in the network. Also, Banerjee et al. in view of Martin disclose a communication network with optical and electrical protocol processing, but do not explicitly disclose that the system comprises a processor readable medium for providing instructions to a processor; however, it would have been obvious to one of ordinary skill in the art at the time of the invention that a processor readable medium and processor would be used to implement the communication protocols of Banerjee et al. in view of Martin, in order to execute the protocols.

3. Claims 2, 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banerjee et al. ("Generalized multiprotocol label switching: an overview of routing and management enhancements"; Banerjee et al., IEEE Communications Magazine, Vol. 39, Issue

1, Jan 2001, Pages 144-150.) in view of Martin (US Published Patent Application No. 09/861167) as applied to claims 1, 4, 7-13, and 16-20 above, and further in view of the User Network Interface (UNI) 1.0 Signaling Specification (OIF2000-125.3, December 2000, http://www.cse.ohio-state.edu/~jain/oif/ftp/oif2000.125.3.pdf).

Regarding claim 2, Banerjee et al. in view of Martin disclose the method of claim 1, and disclose using optical UNI interfaces, but do not disclose that optical interface descriptors each include a user termination point, a user contract identifier, a user group identifier, and a user service mode identifier. The UNI 1.0 Specification discloses that the optical UNI interface contains the following parameters: a user termination point (section 6.3), a user contract identifier (section 13.2.3), a user group identifier (section 6.5), and a user service mode identifier (section 10.10.2.5). It would have been obvious to one of ordinary skill in the art at the time of the invention that these parameters would be used as descriptors for an optical UNI interface, as they are part of the optical UNI specification.

Regarding claim 3, Banerjee et al. in view of Martin disclose the method of claim 2, wherein the link state advertisement includes the optical interface descriptor, as described above for claim 1.

Regarding claim 14, Banerjee et al. in view of Martin disclose the method of claim 4, and disclose using optical UNI interfaces, but do not disclose that optical interface descriptors each include a user termination point, a user contract identifier, a user group identifier, and a user service mode identifier. The UNI 1.0 Specification discloses that the optical UNI interface contains the following parameters: a user termination point (section 6.3), a user contract identifier (section 13.2.3), a user group identifier (section 6.5), and a user service mode identifier (section 10.10.2.5). It would have been obvious to one of ordinary skill in the art at the time of

the invention that these parameters would be used as descriptors for an optical UNI interface, as they are part of the optical UNI specification.

Allowable Subject Matter

4. Claims 5, 6, 15 and 21-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments filed 6 July 2004 have been fully considered but they are not persuasive.

Regarding claims 1, 4, 7-13 and 16-20, and their dependent claims, the applicant argues that the Examiner used hindsight in the obviousness rejection of the claims. However, the Banerjee et al. reference provides sufficient suggestion for *prima facie* obviousness regarding the limitation of checking "an optical UNI interface type, an optical interface descriptor, and available bandwidth". Banerjee et al. disclose routing and signaling protocol advertisements adapted to the peculiarities of photonic switches, where signaling protocol advertisements are inherently forms of information that are checked when routing information in the network. Banerjee et al. disclose non-limiting examples of the kinds of information advertised (page 146, col. 1, paragraph 3). Here the available bandwidth is disclosed explicitly as one type of information in the statement "advertise the availability of optical resources in the network (e.g. ...bandwidth on wavelengths)". The suggestion for checking an optical UNI interface type and descriptor occurs earlier in the reference where Banerjee et al. describes the optical architecture and the different network models, where the disclosure says that optical UNIs exists between

the core network and the edge devices, the edge devices supporting either dynamically or statically provisioned lightpaths for signaling through the network (page 145). Since the type of UNI interface is related to the network architecture (model) and the signaling of edge traffic through the network, it would have been obvious to one of ordinary skill in the art at the time of the invention that optical UNI interface type and descriptor information would be included in the signal protocol advertisement information, which advertisements are used in routing traffic through the core network.

Further the applicant argues that Martin does not teach or suggest the limitations of the claim. However, Martin teaches information on OSPF protocol and the use of LSAs, specifically restricting propagation of certain LSA types beyond certain network areas (i.e. checking and then accepting or rejecting the propagation request). This teaching is applicable to the optical network of Banerjee et al. since the network of Banerjee et al. is related to OSPF protocol and the use of LSAs. The applicant also argues that the motivation to combine Banerjee et al. in view of Martin was based on hindsight reasoning. However, given the parallel teachings of OSPF protocal and the use of LSAs in Banerjee et al. and Martin, there was no hindsight reasoning.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

7. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

JASON CHAN
SUPERVISORY PATENT EXAMINER
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